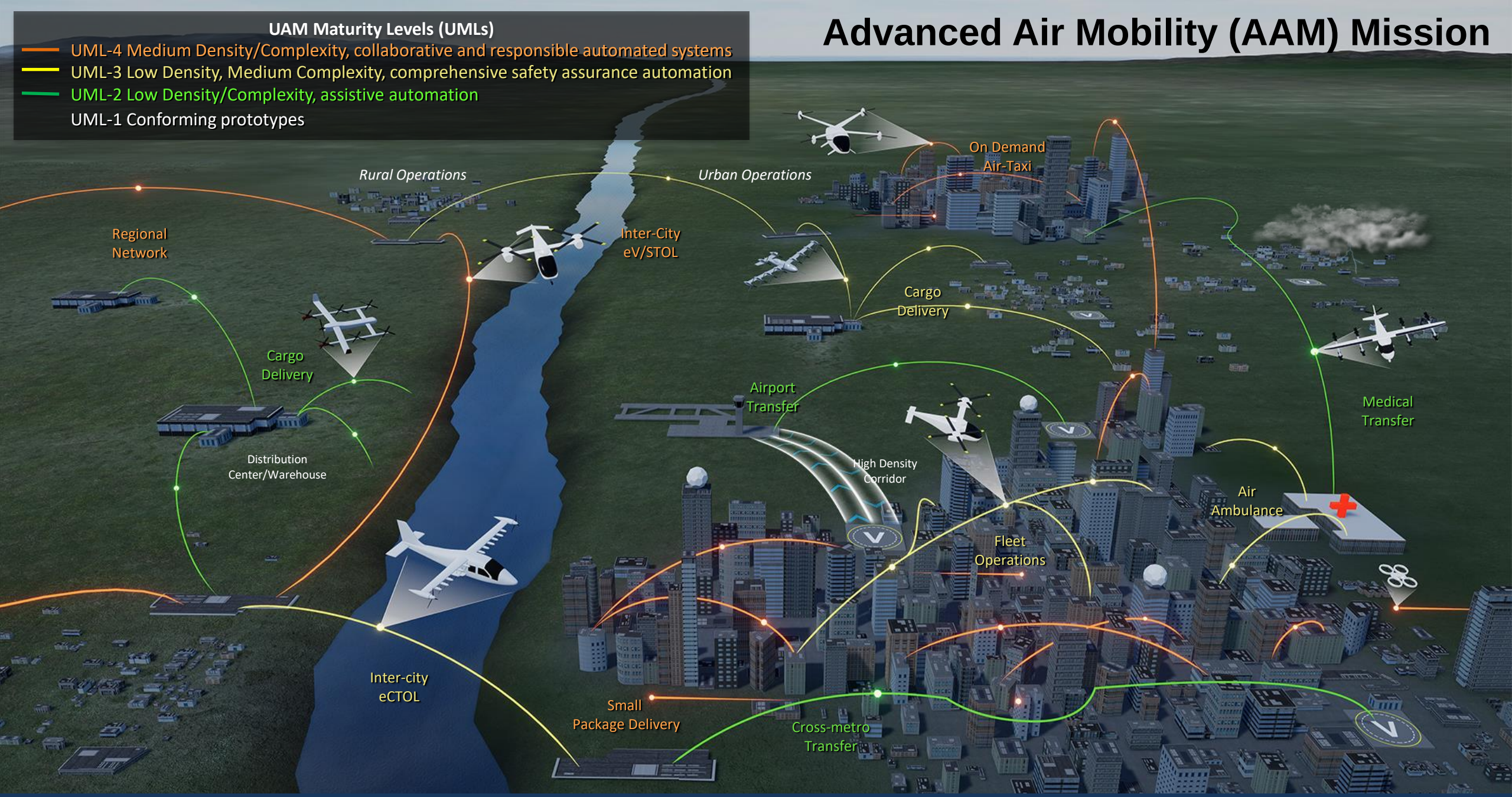
VFS Transformative Vertical Flight

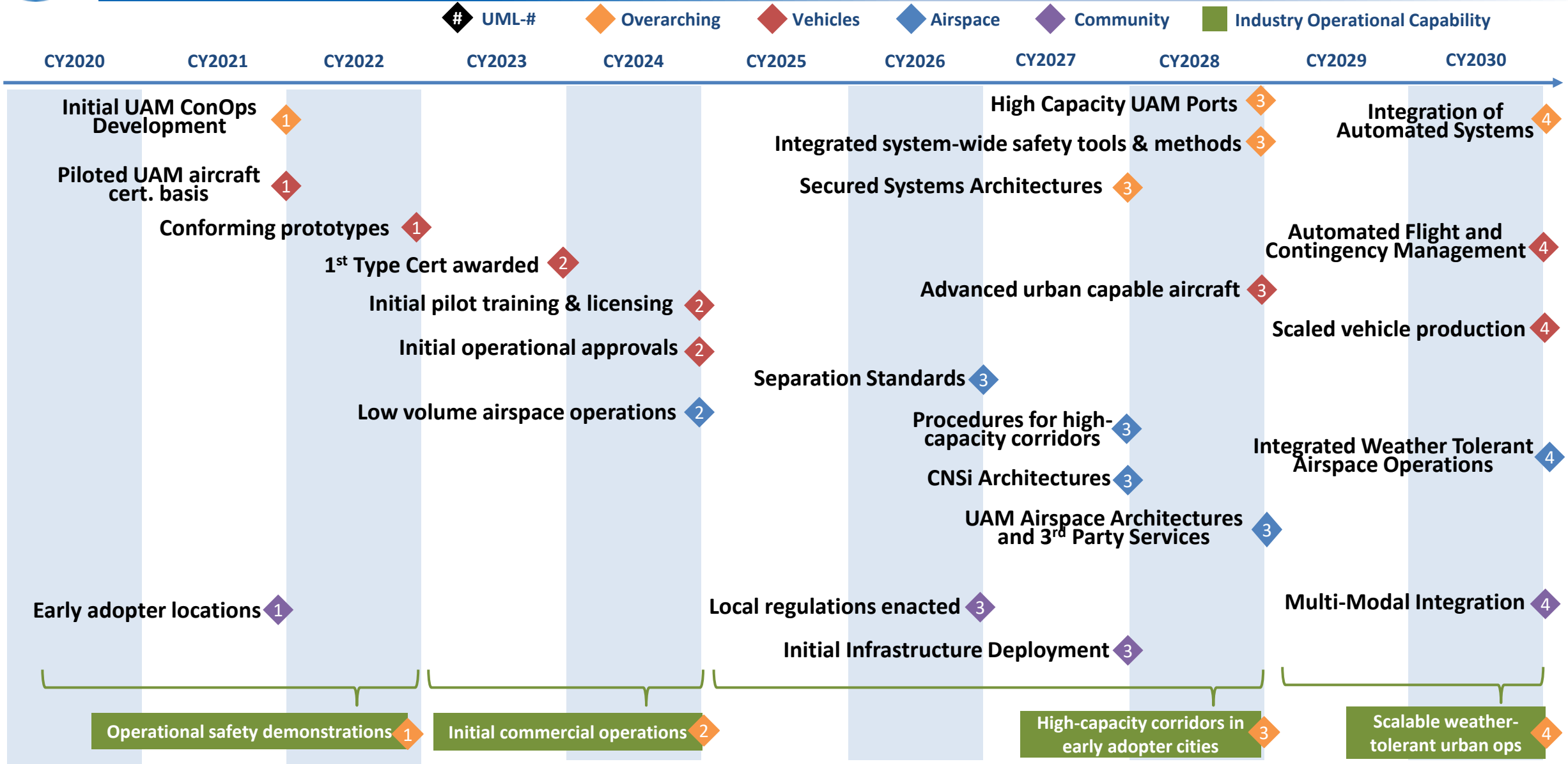
January 25, 2022

Advanced Air Mobility (AAM) Mission



Safe, sustainable, affordable, and accessible aviation for transformational local and intraregional missions

Urban Air Mobility (UAM) Ecosystem Goals[1]

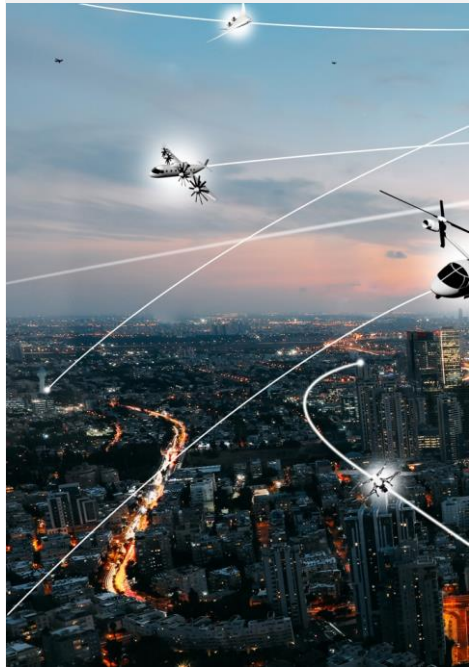


[1] Based on a range of publicly available industry projections; not a consensus view; aggressive

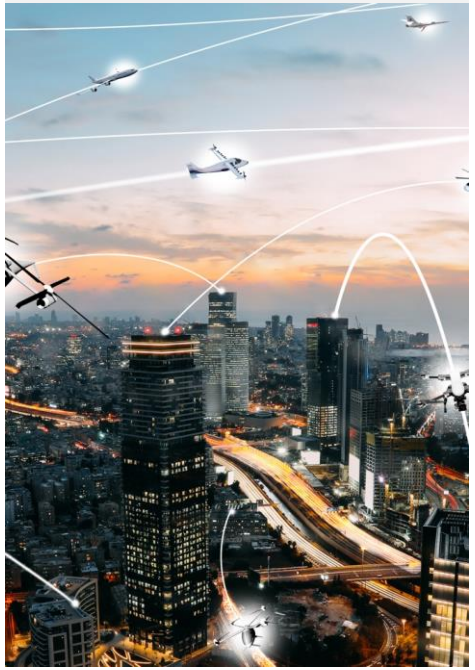
CNSi: Communication, Navigation, Surveillance, Information
UML: UAM Maturity Level

NASA Role to Address AAM Challenges

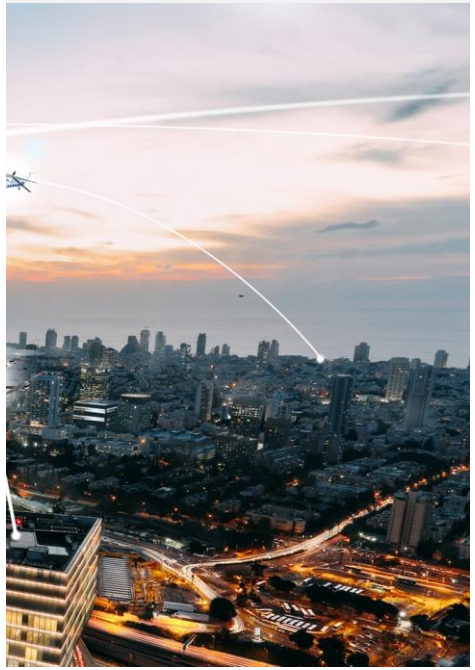
Vehicle Development and Operations



Airspace Design and Operations



Community Integration

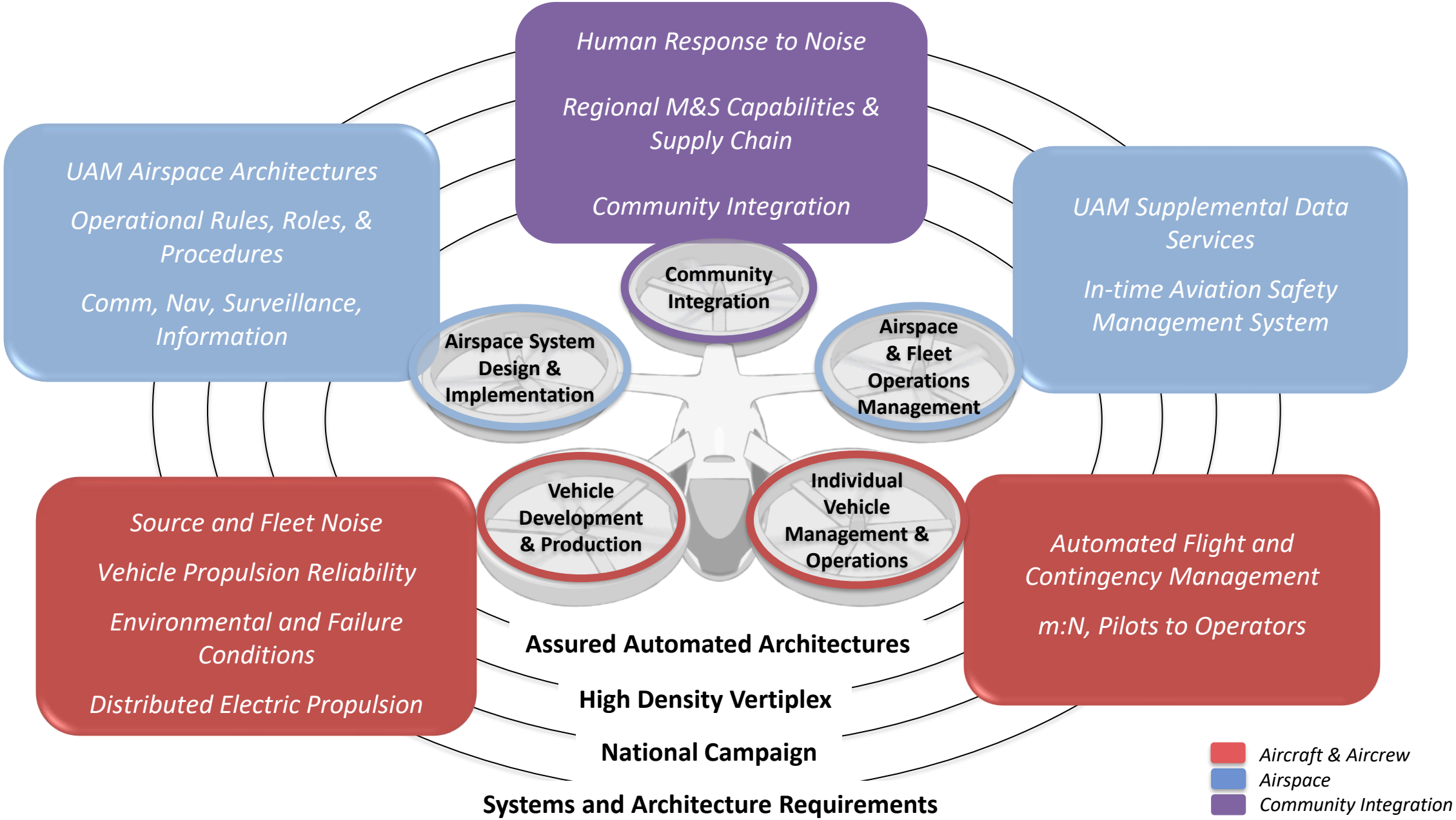


NASA and key partners are collectively taking on the most difficult mission challenges to enable industry to flourish by 2030

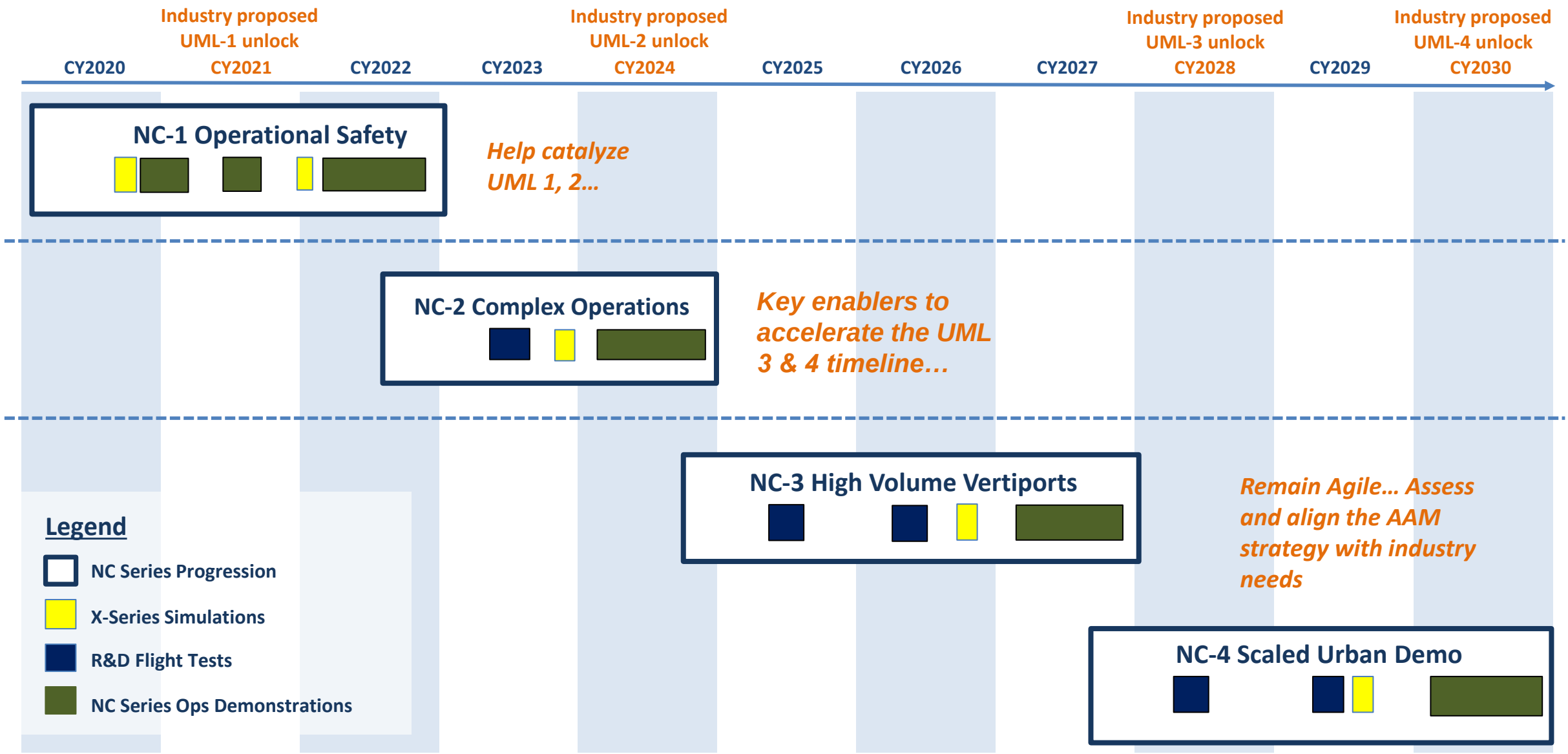
- **Research and Development Portfolio**
- **AAM National Campaign Series**
- **Robust Ecosystem Partnerships**

NASA to deliver long term technical solutions and architecture requirements for the industry and regulatory communities

NASA AAM Mission Priorities

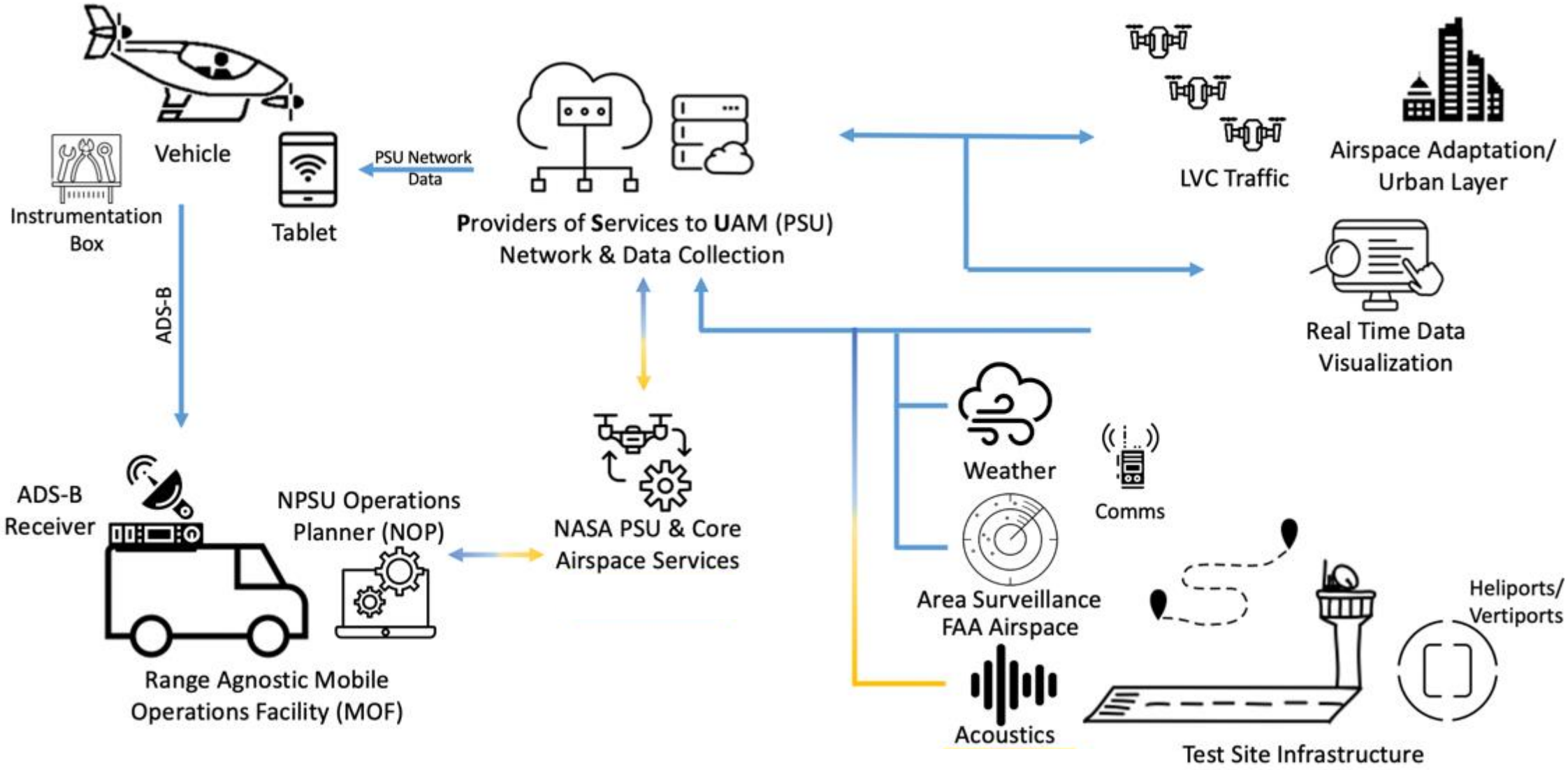


National Campaign Series Support of the Industry Timeline



UML "unlocks" based on a range of publicly available industry projections and conversations with partners; not a consensus view

NC Developmental Test - Flight Interfaces Diagram



NC-DT Noise Data Collection

Mobile Acoustics Facility along with an array of 60 microphones helped the NC team measure the acoustic profile of Joby's aircraft

Example Ground Noise Contour from previous helicopter test

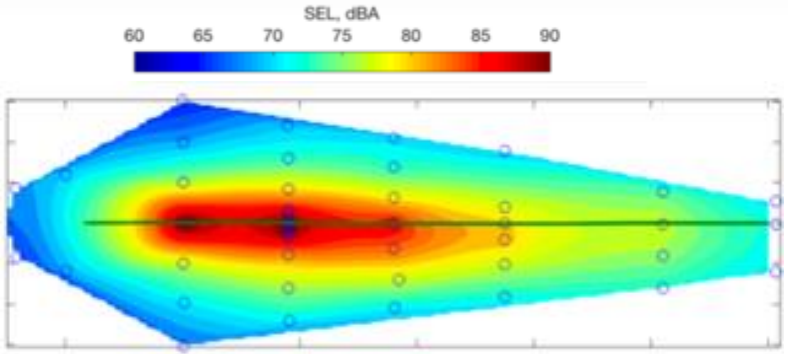
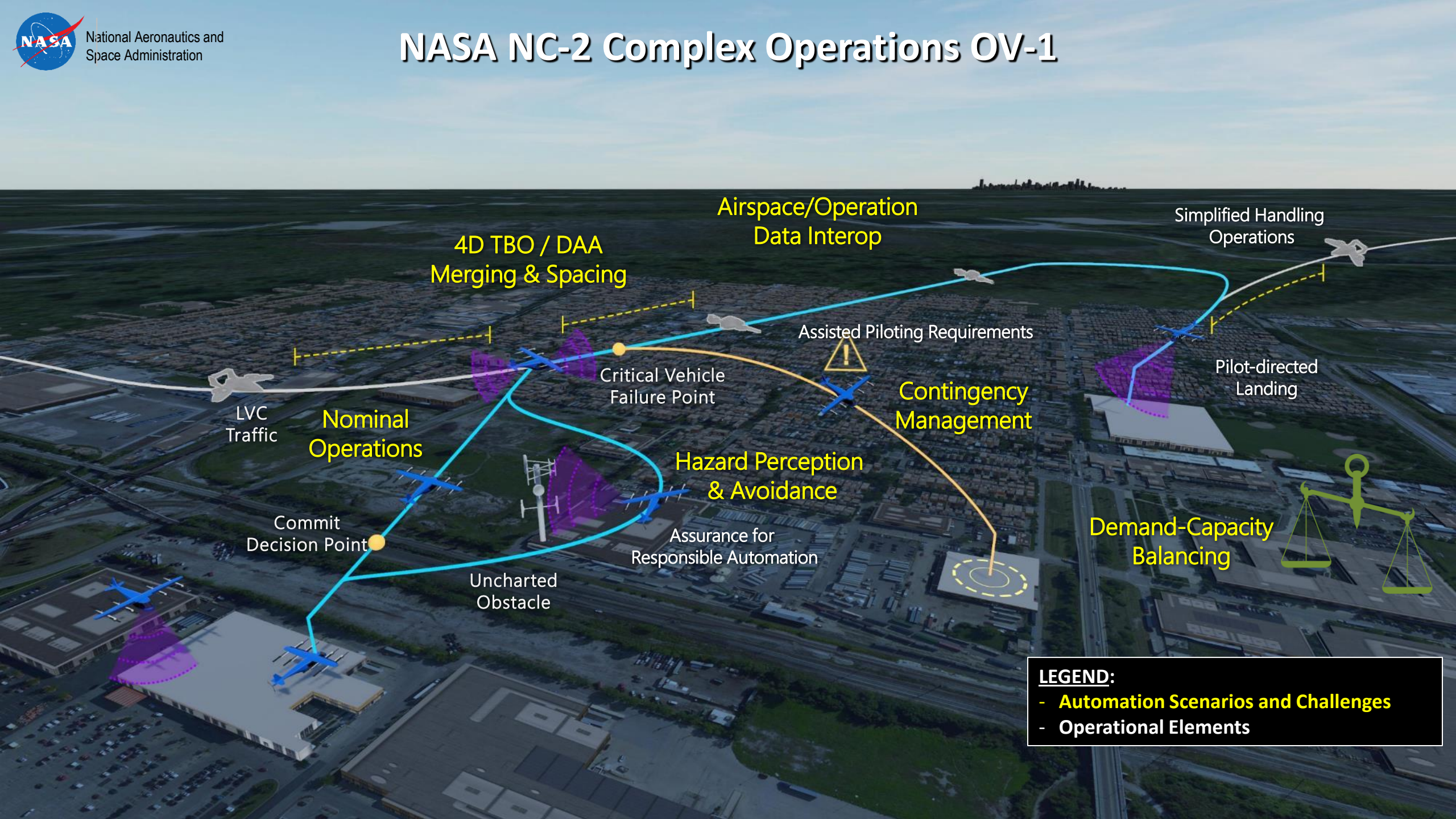


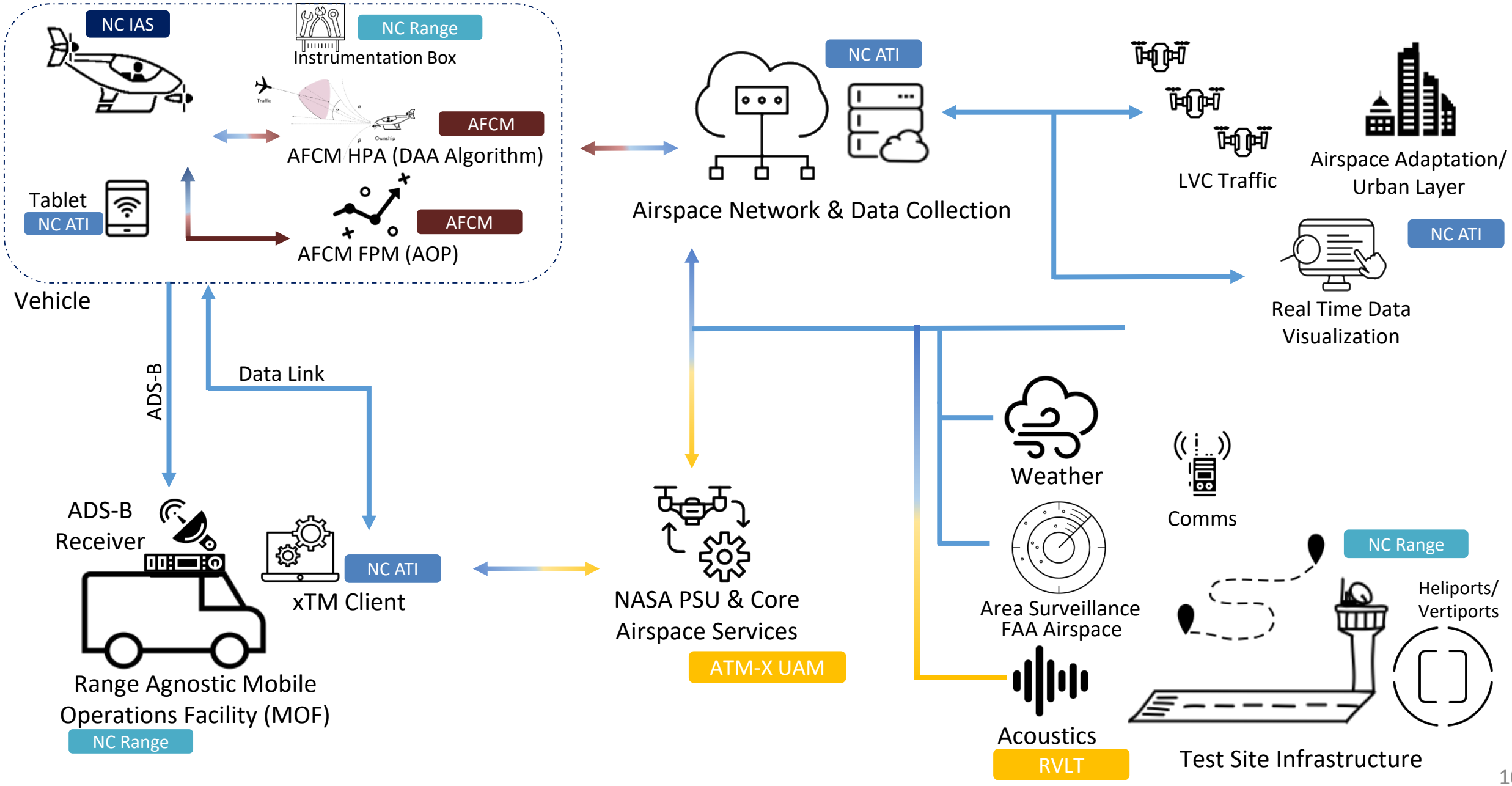
Image credit: Joby Aviation

National Aeronautics and Space Administration

NASA NC-2 Complex Operations OV-1

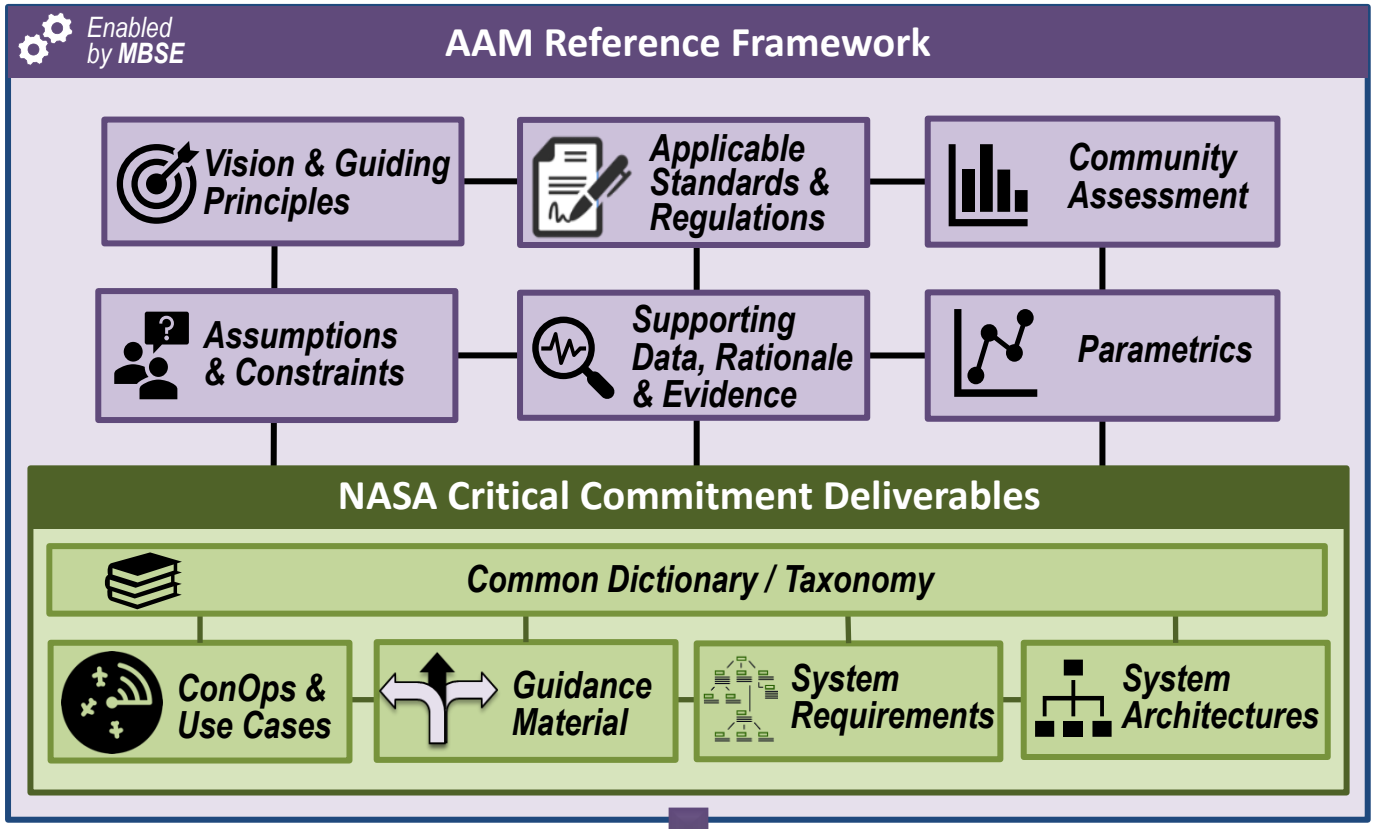


IAS-1 Functional Interfaces - *Draft*



NASA AAM MBSE Framework & Critical Commitment

NASA is using a Model-based System Engineering approach to capture and organize the elements of a medium density/complexity "Book of Requirements and Guidelines (BoRG)"



AAM System Architecture and Recommended Requirements

AAM Mission Critical Commitment:

Based on NASA research and activities, the AAM Mission will deliver validated system architectures and recommended requirements for aircraft, airspace, and infrastructure systems to enable sustainable and scalable medium density advanced air mobility operations

AAM Ecosystem Working Groups

Align on a common vision for AAM

Learn about NASA's research and planned transition paths

Adopt a strategy for engaging the public on AAM

Collectively identify and investigate key hurdles and associated needs

Develop AAM system and architecture requirements

Support regulatory and standards development

Form a connected stakeholder community

See https://nari.arc.nasa.gov/aam-portal/ for more information

Accelerate the development of safe and scalable AAM flight operations by bringing together the broad and diverse ecosystem

Questions?

BACK-UP

Strong Domestic (e)VTOL Industry Base

- Alaka'i

- Beta — Flown

- Bell

- Elroy Air — Flown

- Joby — Flown

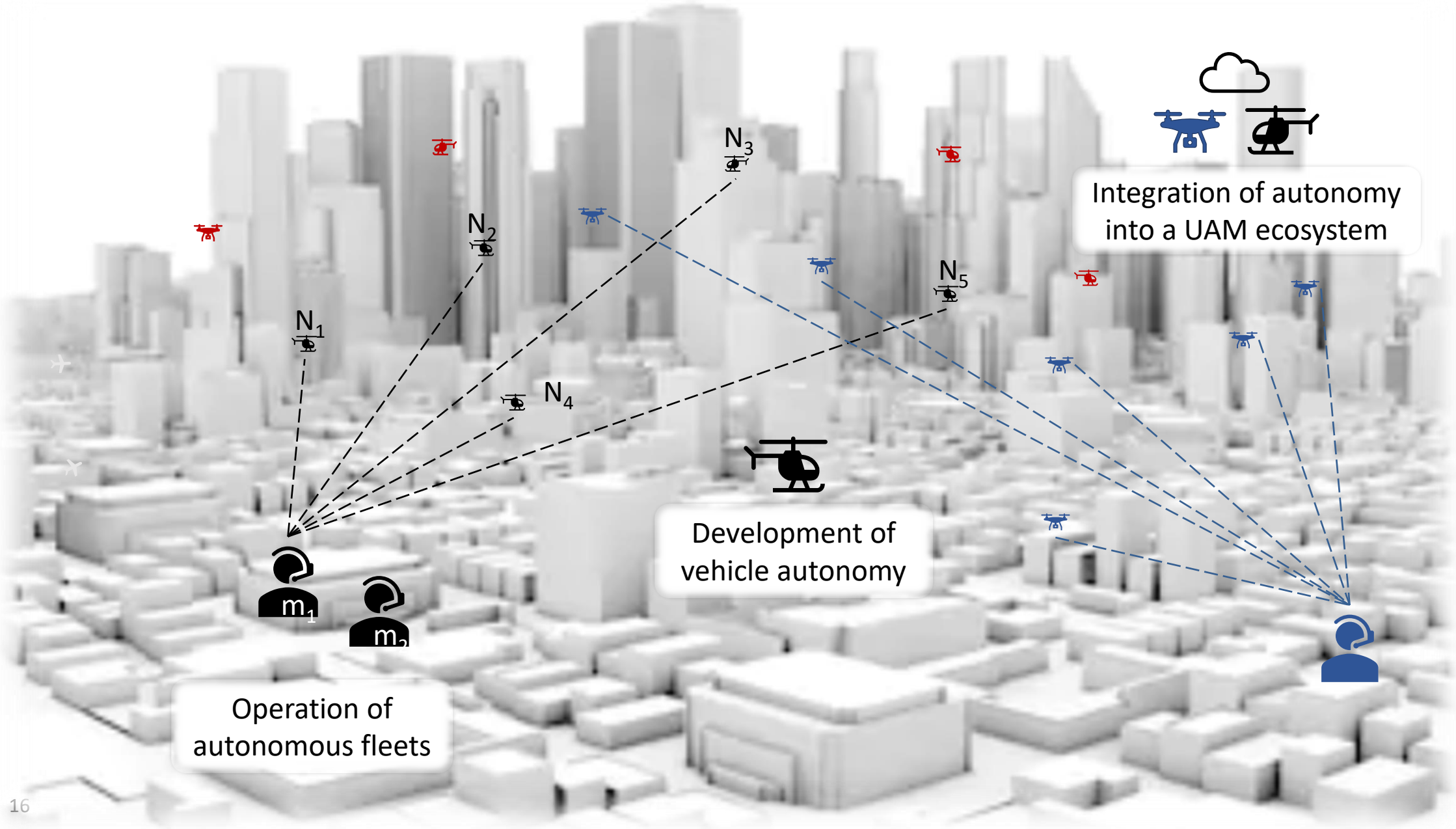
- Jaunt Air Mobility

- Kitty Hawk — Flown

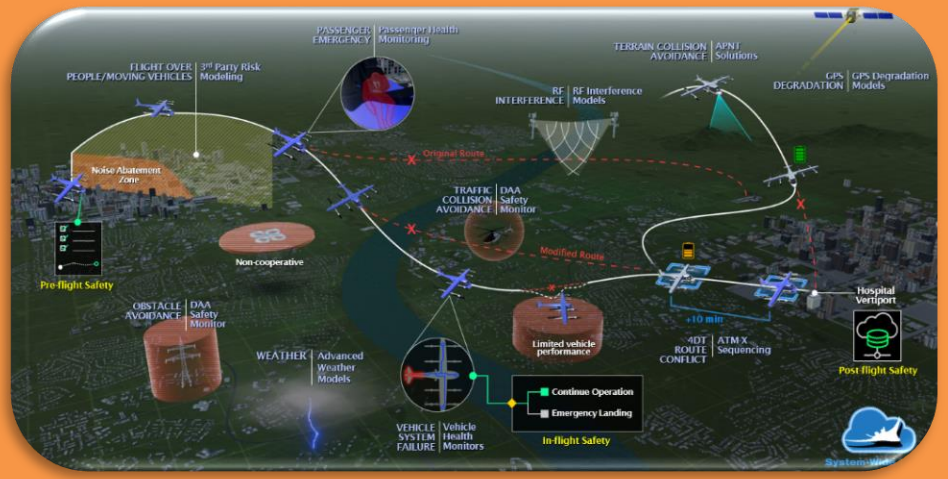
- Wisk — Flown

- Workhorse/Moog — Flown

Autonomous Systems discipline



Integrated System-Wide Safety tools & methods



Integrated system-wide safety tools & methods

Develop assurance arguments that could be used as a basis for certification for In-Time Aviation Safety Management Systems.

Community state of the art

Community challenges

NASA Role